SPEC SHEET

Digital Indicating pH Meter

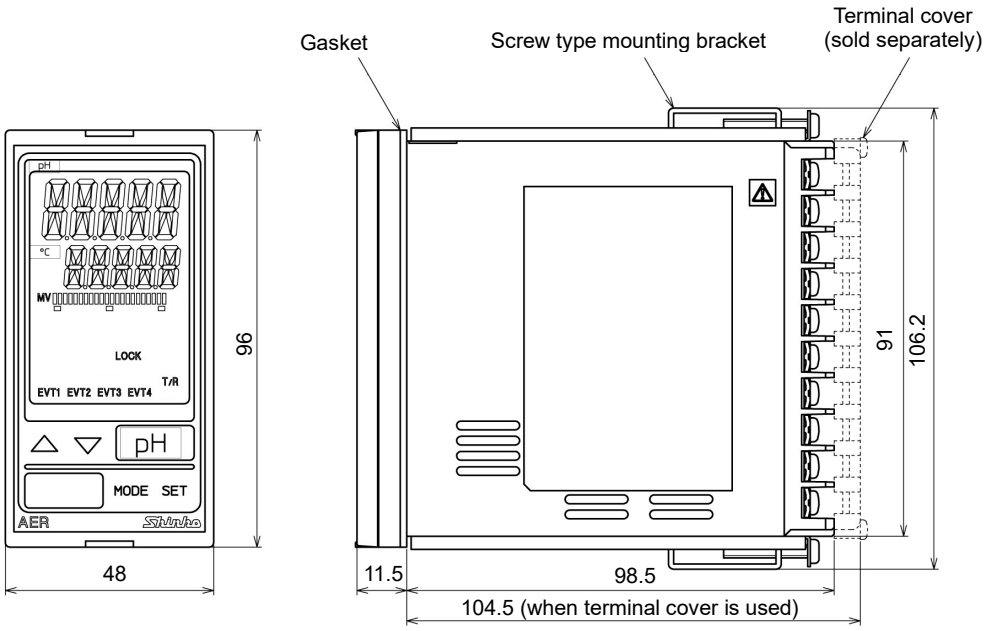
AER-102-PH

- 48 x 96 mm, panel mounting type
- Drip-proof/Dust-proof IP66 (for front panel only)
- Power supply 24 V AC/DC (user-specified)
- 2-points Contact output (standard), additional 2 points (optional)
- Proportional control, max. 4 points of relay contact
- Various settings & calibration via software communication (RS-485) (optional)
- Cleansing output function
- Transmission output 2 (optional)

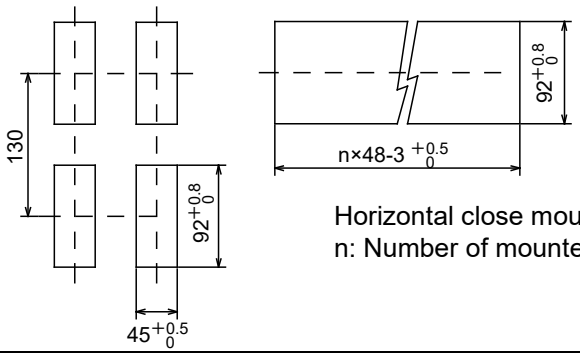
<table>
<tr><td>Name</td><td>Digital indicating pH meter</td></tr>
<tr><td>Model</td><td>
<table>
<tr><th>AER - 1 0</th><th>2</th><th>-PH</th><th>□</th><th>, □□□</th><th colspan="3"></th></tr>
<tr><td>Input points</td><td>2</td><td></td><td></td><td></td><td colspan="3">2 points (pH, temperature)</td></tr>
<tr><td colspan="2" rowspan="3">Input</td><td rowspan="3">PH</td><td rowspan="3"></td><td rowspan="3"></td><td rowspan="2">pH combined electrode sensor</td><td>Pt spec (*1)</td><td>Pt1000</td></tr>
<tr><td rowspan="2">Cu spec (*1)</td><td>Pt100</td></tr>
<tr><td>Cu500/25℃</td></tr>
<tr><td colspan="3">Power supply voltage</td><td></td><td></td><td colspan="3">100 to 240 V AC (standard)</td></tr>
<tr><td colspan="3"></td><td>1</td><td></td><td colspan="3">24 V AC/DC (*2)</td></tr>
<tr><td colspan="4" rowspan="3">Option</td><td>C5</td><td colspan="3">Serial communication RS-485</td></tr>
<tr><td>EVT3</td><td colspan="3">EVT3, EVT4 outputs (Contact output 3, 4)</td></tr>
<tr><td>TA2</td><td colspan="3">Transmission output 2 (*3)</td></tr>
</table>
(*1) This input temperature specification was specified at the time of ordering.
(*2) Power supply voltage 100 to 240 V AC is standard.
When ordering 24 V AC/DC, enter 1 in Power supply voltage, after ‘PH’.
(*3) If Transmission output 2 (TA2 option) is ordered, EVT1 is not available.
</td></tr>
<tr><td>Measurement range</td><td>pH value: pH 0.00 to 14.00 Resolution: pH 0.01
Temperature: 0.0 to 100.0℃ Resolution: 0.1℃</td></tr>
<tr><td>Repeatability</td><td>pH value: pH ±0.05</td></tr>
<tr><td>Linearity</td><td>pH value: pH ±0.05</td></tr>
<tr><td>Indication accuracy</td><td>Temperature: ±1℃</td></tr>
<tr><td>Calibration function</td><td>2-points Automatic or Manual calibration
2-points Automatic calibration: Automatic electrode quality evaluation
Standard solution type: pH 2, 4, 7, 9, 10 (JIS)
Combination of standard solution: pH7 (1st solution) and any 2nd solution
Manual calibration: 2 types of solution with a difference of 2 pH or more
Temperature calibration (1 point)</td></tr>
<tr><td>Contact output</td><td>Relay contact 1a
Control capacity: 3 A 250 V AC (Resistive load), 1 A 250 V AC (Inductive load, cosϕ=0.4)
Electrical life: 100,000 cycles, Output action: P control, ON/OFF control</td></tr>
<tr><td>Transmission output 1</td><td>Converting pH, temperature or MV to analog signal every input sampling period, outputs the value in current. (Factory default: pH)
However, if ‘No Temperature Compensation’ is selected in [Electrode RTD], and if ‘Temperature transmission’ is selected, the value set in [Reference temperature] will be output. If Transmission output 1 high limit and low limit are set to the same value, Transmission output 1 will be fixed at 4 mA DC.
Transmission output can be indicated with the bar graph.
Resolution: 12000, Output: 4 to 20 mA DC (Load resistance: Max. 550 Ω)
Output accuracy: Within ±0.3% of Transmission output 1 span</td></tr>
<tr><td>Self-diagnosis</td><td>The CPU is monitored by a watchdog timer, and if an abnormal status occurs, the instrument is switched to warm-up status.</td></tr>
<tr><td>Temperature compensation range</td><td>0.0 to 100.0℃</td></tr>
<tr><td>Ambient temperature</td><td>0 to 50℃ (32 to 122℉)</td></tr>
<tr><td>Ambient humidity</td><td>35 to 85 %RH (Non-condensing)</td></tr>
</table>

<table>
<tr><td>Power supply
(user-specified)</td><td>AER-102-PH: 100 to 240 V AC 50/60 Hz Allowable fluctuation range: 85 to 264 V AC
AER-102-PH 1: 24 V AC/DC 50/60 Hz Allowable fluctuation range: 20 to 28 V AC/DC</td></tr>
<tr><td>Structure</td><td>Flush (Applicable panel thickness: 1 to 8 mm)
Case: Flame-resistant resin, Color: Black
Front panel: Membrane sheet
Drip-proof/Dust-proof: IP66 (for front panel only)</td></tr>
<tr><td>Protection structure</td><td>Overvoltage category Ⅱ, Pollution degree 2 (IEC61010-1)</td></tr>
<tr><td>Safety standards</td><td>RoHS directive compliant</td></tr>
<tr><td>Dimensions</td><td>W48 x H96 x D110 mm, Case depth: 98.5 mm (when mounted through a control panel)</td></tr>
<tr><td>Weight</td><td>Approx. 280 g</td></tr>
<tr><td>Serial communication
[C5 option]</td><td>The following operations can be carried out from an external computer.
(1) Reading and setting of various set values
(2) Reading of pH, temperature and status
(3) Function change and adjustment
(4) Reading and setting of user save area
<table>
<tr><td>Cable length</td><td>1.2 km (Max), Cable resistance: Within 50 Ω (Terminators are not necessary, but if used, use 120 Ω or more on both sides.)</td></tr>
<tr><td>Communication line</td><td>EIA RS-485</td></tr>
<tr><td>Communication method</td><td>Half-duplex communication</td></tr>
<tr><td>Communication speed</td><td>9600, 19200, 38400 bps (Selectable by keypad)</td></tr>
<tr><td>Synchronization method</td><td>Start-stop synchronization</td></tr>
<tr><td>Code form</td><td>ASCII, Binary</td></tr>
<tr><td>Communication protocol</td><td>Shinko protocol, MODBUS ASCII, MODBUS RTU
(Selectable by keypad)</td></tr>
<tr><td>Data bit/parity</td><td>8-bits/No parity, 7-bits/No parity, 8-bits/Even, 7-bits/Even,
8-bits/Odd, 7-bits/Odd (Selectable by keypad)</td></tr>
<tr><td>Stop bit</td><td>1, 2 (Selectable by keypad)</td></tr>
<tr><td>Error correction</td><td>Command request repeat system</td></tr>
<tr><td>Error detection</td><td>Parity check, Checksum (Shinko protocol),
LRC (MODBUS protocol ASCII),
CRC-16 (MODBUS protocol RTU)</td></tr>
</table>
Data Format
<table>
<tr><th>Communication Protocol</th><th>Shinko Protocol</th><th>MODBUS ASCII</th><th>MODBUS RTU</th></tr>
<tr><td>Start bit</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>Data bit</td><td>7</td><td>7 (8) (Selectable)</td><td>8</td></tr>
<tr><td>Parity</td><td>Even</td><td>Even (No parity, Odd)
(Selectable)</td><td>No parity (Even, Odd)
(Selectable)</td></tr>
<tr><td>Stop bit</td><td>1</td><td>1 (2)
(Selectable)</td><td>1 (2)
(Selectable)</td></tr>
</table></td></tr>
<tr><td>EVT3, EVT4 outputs (Contact output 3, 4)
[EVT3 option]</td><td>Same as Contact output.</td></tr>
<tr><td>Transmission output 2
[TA2 option]</td><td>Converting pH, temperature or MV to analog signal every input sampling period, outputs the value in current.
(Factory default: Transmission output 1: pH, Transmission output 2: Temperature)
If ‘No temperature compensation’ is selected in [Electrode RTD], and if ‘Temperature transmission’ is selected, the value set in [Reference temperature] will be output.
If Transmission output 2 high limit and low limit are set to the same value, Transmission output 2 will be fixed at 4 mA DC. Transmission output can be indicated with the bar graph.
Resolution: 12000
Current: 4 to 20 mA DC (Load resistance: Max. 550 Ω)
Output accuracy: Within ±0.3% of Transmission output 2 span</td></tr>
</table>

Dimensions
(Scale: mm)

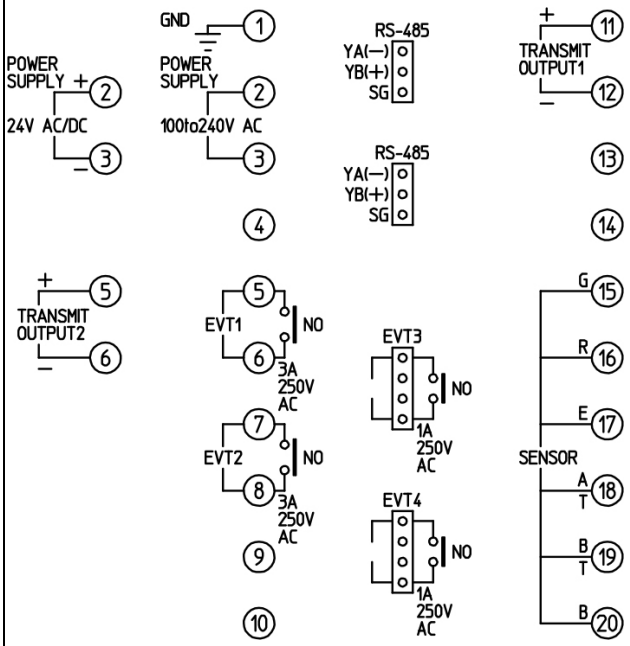


Panel cutout
(Scale: mm)



Horizontal close mounting
n: Number of mounted units

Terminal
arrangement



GND: Ground terminal (①)
POWER SUPPLY: Power terminals(②-③)
EVT1: EVT1 output terminals
(Contact output 1) (⑤-⑥)
EVT2: EVT2 output terminals
(Contact output 2) (⑦-⑧)
TRANSMIT OUTPUT1:
Transmission output 1 terminals (⑪-⑫)
G, R: Electrode sensor terminals (⑮-⑯)
E: Shield wire terminal (⑰)
T, T: Temperature compensation sensor terminals Cu500 (⑱-⑲)
A, B: Temperature compensation sensor terminals
Pt100 (2-wire type), Pt1000 (⑱-⑲)
A, B, B: Temperature compensation sensor terminals Pt100 (3-wire type) (⑱-⑲-⑳)
When C5 option is ordered:
RS-485: Serial communication
2 connectors are wired internally.
When EVT3 option is ordered:
EVT3: EVT3 output (Contact output 3)
EVT4: EVT4 output (Contact output 4)
When TA2 option is ordered:
TRANSMIT OUTPUT2: Transmission output 2 terminals (⑤-⑥)